

# What is the relationship between eating frequency and adiposity in children?

## Conclusion

Evidence is insufficient to determine whether frequency of eating has an effect on overweight and obesity in children and adults.

## Grade: Limited

Overall strength of the available supporting evidence: Strong; Moderate; Limited; Expert Opinion Only; Grade not assignable For additional information regarding how to interpret grades, [click here](#).

## Evidence Summary Overview

The literature review identified one prospective cohort study (Franko, 2008). The study was conducted in the US and had a sample of 2,379 girls. This study found that increased meal frequency, measured by number of days with more than three meals, was inversely associated with body mass index (BMI) in adolescent girls.

The Committee did not review the literature on the use of eating frequency as a tool for adults actively losing weight.


## Evidence summary paragraphs:

### *Cohort Studies (1)*

**Franko DL et al, 2008** (neutral quality) conducted a prospective cohort study in the United States to investigate the relationship between meal frequency and BMI. Participants were from the National Growth and Health survey, and were recruited at ages nine to 10 years and followed for 10 years. Three-day food records were collected annually for visits one to four, seven, eight and 10, and were used to calculate meal frequency (days eating more than three meals). Height, weight and BMI were assessed every year. The final samples included 2,379 girls who were black or white, non-Hispanic. Girls who ate more than three meals on more days had lower BMI-for-age Z-scores ( $P < 0.0001$ ). For each additional day of eating more than three meals, BMI-for-age Z-scores were estimated to increase by -0.05 (95% CI: -0.3, -0.6). However, the slope of this association tended to become less steep in the later visits ( $P < 0.0001$ ). The main effect for meal frequency and overweight was not significant ( $P = 0.20$ ), but there was a significant race by meal frequency interaction ( $P = 0.02$ ). Black girls who ate more than three meals on more days exhibited a decreased likelihood of overweight; for each additional day consuming more than three meals, black girls were 1.23 (95% CI: 1.05, 1.50) less likely to be overweight. The authors concluded that meal frequency, measured by number of days with more than three meals per day, was inversely associated to BMI in adolescent girls.

 [View table in new window](#)


Author, Year, Study Design,	Participants	Methods	Outcomes
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Class, Rating			
<p>Franko DL, Striegel-Moore RH et al, 2008</p> <p>Study Design: Prospective Cohort Study</p> <p>Class: B</p> <p>Rating: </p>	<p>N=2,379 girls who were black or white, non-Hispanic.</p> <p>Location: United States.</p>	<p>Participants were from the National Growth and Health survey, and were recruited at ages nine to 10 years and followed for 10 years.</p> <p>Three-day food records were collected annually for visits one to four, seven, eight and 10, and were used to calculate meal frequency (days eating more than meals).</p> <p>Height, weight and BMI were assessed every year.</p>	<p>Girls who ate &gt; three meals on more days had ↓ BMI-for-age Z-scores (<math>P&lt;0.0001</math>). For each additional day of eating &gt; three meals, BMI-for-age Z-scores were estimated to ↑ by -0.05 (95% CI: -0.3, -0.6). However, the slope of this association tended to become less steep in the later visits (<math>P&lt;0.0001</math>).</p> <p>The main effect for meal frequency and overweight was NS (<math>P=0.20</math>), but there was a significant race by meal frequency interaction (<math>P=0.02</math>). Black girls who ate &gt; three meals on more days exhibited a ↓ likelihood of overweight; for each additional day consuming &gt; three meals, black girls were 1.23 (95% CI: 1.05, 1.50) less likely to be overweight.</p>

### Research Design and Implementation Rating Summary

For a summary of the Research Design and Implementation Rating results, [click here](#).

### Worksheets

 [Franko DL, Striegel-Moore RH, Thompson D, Affenito SG, Schreiber GB, Daniels SR, Crawford PB. The relationship between meal frequency and body mass index in black and white adolescent girls: More is less. \*Int J Obes\* \(Lond\). 2008 Jan; 32 \(1\): 23-29.](#)